



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Anil V. Nadkarni, John T. Abrams and Roy Kelly

Serial No. : 08/678,776

Filed : July 11, 1996

Title : "LEAD-FREE FRANGIBLE BULLETS AND PROCESS FOR  
MAKING SAME"

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GROUP 3200

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August 26, 1996

Hon. Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT  
UNDER 37 CFR §§ 1.56 and 1.97 (c)

SIR:

Pursuant to 37 CFR §1.56 and §1.97(c), the attorneys for the application hereby bring to the attention of the Patent and Trademark Office the following patents and publications broadly related to the field of the invention of the application identified above:

United States Patent Documents

United States Patent No. 5,399,187 to Mravic et al. discloses a lead-free bullet which comprises a sintered composite having one or more high density powders selected from tungsten, tungsten

#2 / Prior Art w/AM  
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G. Johnson  
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carbide, ferrotungsten, etc., a lower density constituent selected from tin, zinc, iron, copper or a plastic matrix material, and a polymer binder. These composite powders are pressed and sintered.

United States Patent No. 5,078,054 to Sankaranarayanan et al. discloses a frangible projectile comprising a body formed from iron powder with 2 to 5% by weight graphite or iron with 3 to 7% by weight of  $Al_2O_3$ . The powders are compacted by cold compaction or isotactic pressing, and then sintered.

United States Patent No. 5,442,989 to Anderson discloses projectiles wherein the casing is frangible and made out of molded stainless steel powder and a minor portion of iron powder mixture with 0.2-2% by weight of graphite. The casing encloses a penetrator rod made of a hard material such as tungsten or tungsten carbide. Upon impact against the target, the casing produces fragments which are thrown in all directions with great energy while the penetrator rod pierces the target.

United States Patent No. 4,165,692 to Dufort discloses a projectile with a brittle sintered metal casing having a hollow interior chamber defined by a tapering helix with sharp edge stress risers which provide fault lines and cause the projectile to break up into fragments upon impact against a hard surface. The casing is made of pressed iron powder which is then sintered.

United States Patent No. 5,237,930 discloses a frangible ammunition comprising compacted mixture of fine copper powder and a thermoplastic resin selected from nylon 11 and nylon 12. The

copper content is up to 93% by weight. The bullets are made by injection molding.

The items listed above are identified on Form PTO 1449 which is submitted with this statement. A copy of each of the items identified above is submitted with this statement.

The attorneys for the applicant take no position on whether any item cited above and listed on Form PTO 1449 constitutes prior art against the subject application under any particular provision of Title 35 of the United States Code.

This statement is within three months of filing, therefore under 37 CFR §1.97(b)(1) no fee is due. If, however, a fee is deemed necessary, please charge such fee to deposit account No. 11-0171.

Respectfully submitted,

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I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231	
<u>John J. Santalone</u> John J. Santalone, Jr. Reg. No. 32,794	<u>8/26/90</u> Date